METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR NOVEMBER 1949

AEROLOGICAL OBSERVATIONS

[For description of change in Table 1 and charts, see REVIEW, January 1946, p. 6]

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during November 1949*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,001.3 mb.)				Albuquerque, N. Mex. (842.0 mb.)				Atlanta, Ga. (980.0 mb.)				Big Spring, Tex. (930.7 mb.)				Bismarck, N. Dak. (952.4 mb.)				Boise, Idaho (921.1 mb.)				Brownsville, Tex. (1,018.1 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	86	2.5	80	30	1,620	11.4	30	30	300	9.0	69	30	774	12.5	41	30	505	3.3	68	30	868	6.7	73	30	6	18.4	78
1,000	30	96	(*)	----	30	148	(*)	----	30	148	(*)	----	30	158	(*)	----	30	104	(*)	----	30	184	(*)	----	30	160	20.6	70
950	30	513	1.4	71	30	596	(*)	----	30	577	10.9	52	30	601	(*)	----	30	528	(*)	----	30	615	(*)	----	30	607	18.8	55
900	30	944	−.6	75	30	1,059	(*)	----	30	1,025	9.0	50	30	1,058	16.8	30	30	967	5.4	52	30	1,059	9.8	59	30	1,065	16.5	44
850	30	1,399	−2.7	74	30	1,540	(*)	----	30	1,497	7.4	47	30	1,543	14.0	29	30	1,433	3.5	44	30	1,535	9.4	48	30	1,549	14.1	35
800	30	1,878	−4.5	69	30	2,049	12.0	27	30	1,994	5.4	41	30	2,051	11.0	27	30	1,923	1.1	44	30	2,036	7.5	43	30	2,058	11.7	28
750	30	2,390	−6.8	64	30	2,591	8.8	27	30	2,524	3.1	35	30	2,592	7.9	27	30	2,446	−1.7	47	30	2,572	4.8	45	30	2,598	8.6	26
700	30	2,920	−8.9	59	30	3,153	5.4	27	30	3,075	.4	36	30	3,151	4.7	24	30	2,985	−4.9	45	30	3,124	1.4	44	30	3,162	5.7	24
650	29	3,491	−12.0	53	30	3,760	1.3	27	30	3,669	−2.5	31	30	3,755	1.0	22	30	3,572	−8.4	43	30	3,722	−2.3	43	30	3,768	2.3	----
600	29	4,097	−15.1	52	30	4,393	−2.6	27	30	4,298	−6.0	27	30	4,390	−2.3	----	30	4,181	−12.2	42	30	4,347	−6.3	41	30	4,406	−1.1	----
550	29	4,754	−18.6	49	30	5,078	−7.3	----	30	4,972	−10.5	----	30	5,073	−7.7	----	30	4,847	−15.9	43	29	5,025	−11.0	43	29	5,093	−5.3	----
500	29	5,455	−23.1	----	30	5,812	−12.6	----	30	5,699	−15.7	----	30	5,808	−12.6	----	30	5,553	−20.7	----	29	5,745	−15.9	43	29	5,836	−10.4	----
450	29	6,224	−28.3	----	29	6,615	−18.8	----	30	6,490	−21.3	----	30	6,609	−18.5	----	30	6,331	−26.2	----	29	6,538	−21.6	----	29	6,633	−15.9	----
400	29	7,054	−34.0	----	29	7,472	−25.4	----	30	7,344	−27.0	----	30	7,472	−25.5	----	30	7,164	−32.6	----	28	7,385	−28.0	----	29	7,517	−22.6	----
350	29	7,976	−39.8	----	27	8,430	−32.9	----	30	8,292	−34.0	----	30	8,425	−33.0	----	30	8,092	−39.3	----	28	8,329	−35.2	----	29	8,482	−29.6	----
300	29	9,014	−46.5	----	27	9,495	−41.1	----	30	9,355	−41.1	----	29	9,492	−40.9	----	29	9,120	−46.2	----	27	9,384	−42.6	----	29	9,563	−37.5	----
250	28	10,217	−50.7	----	26	10,708	−49.7	----	30	10,574	−48.0	----	27	10,710	−48.6	----	28	10,317	−52.0	----	26	10,612	−49.9	----	28	10,796	−46.1	----
200	26	11,660	−53.3	----	24	12,132	−57.5	----	30	12,019	−55.2	----	21	12,157	−56.1	----	26	11,753	−54.7	----	25	12,046	−55.9	----	27	12,251	−55.5	----
175	26	12,517	−54.3	----	21	12,963	−60.4	----	30	12,865	−58.1	----	21	12,997	−60.0	----	26	12,605	−55.5	----	24	12,889	−58.7	----	26	13,094	−59.7	----
150	18	13,470	−55.1	----	15	13,921	−62.9	----	28	13,829	−61.6	----	21	13,951	−64.1	----	22	13,582	−56.8	----	19	13,840	−61.7	----	25	14,042	−64.1	----
125	16	14,614	−56.3	----	10	15,029	−67.5	----	25	14,949	−65.0	----	17	15,061	−67.3	----	19	14,721	−58.5	----	9	14,967	−64.6	----	22	15,152	−68.3	----
100	11	16,038	−59.1	----	5	16,330	−70.0	----	22	16,303	−67.5	----	9	16,412	−71.1	----	12	16,123	−60.5	----	----	----	----	----	15	16,490	−72.9	----
80	6	17,422	−59.1	----	----	----	----	----	14	17,646	−67.2	----	----	----	----	----	6	17,497	−60.4	----	----	----	----	----	5	17,764	−72.3	----

Standard pressure surface (mb.)	Buffalo, N. Y. (984.4 mb.)				Camaguey, Cuba [1] (—— mb.)				Caribou, Maine (987.3 mb.)				Charleston, S. C. (1,014.5 mb.)				Ciudad Victoria, Mex. (978.9 mb.)				Columbia, Mo. (987.1 mb.)				Dodge City, Kans. (926.1 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	221	2.9	79	----	----	----	----	30	191	−3.7	85	30	18	10.5	81	30	335	22.2	45	30	239	7.7	58	30	792	8.5	53
1,000	30	93	(*)	----	----	----	----	----	30	89	(*)	----	30	138	13.3	65	30	147	(*)	----	30	129	(*)	----	30	146	(*)	----
950	30	511	1.7	76	----	----	----	----	30	499	−2.8	78	30	578	12.2	53	30	594	21.8	41	30	558	8.7	48	30	581	(*)	----
900	30	943	−.4	75	----	----	----	----	30	923	−4.5	76	30	1,021	9.9	47	30	1,061	18.2	44	30	1,000	6.4	47	30	1,032	13.6	37
850	30	1,398	−2.6	73	----	----	----	----	30	1,372	−5.7	72	30	1,495	8.2	43	30	1,547	14.3	46	30	1,466	4.4	45	30	1,511	11.8	33
800	30	1,877	−4.9	70	----	----	----	----	30	1,846	−7.1	63	30	1,993	5.9	42	30	2,055	10.8	46	30	1,958	2.2	44	30	2,015	8.8	33
750	30	2,390	−7.1	65	----	----	----	----	30	2,353	−8.9	60	30	2,527	3.8	37	30	2,594	7.5	47	30	2,482	−.2	40	30	2,551	5.8	33
700	30	2,918	−9.8	63	----	----	----	----	30	2,880	−10.9	59	30	3,077	1.4	33	30	3,155	4.9	41	30	3,027	−2.5	35	30	3,107	2.6	31
650	29	3,494	−12.6	57	----	----	----	----	30	3,452	−13.5	56	30	3,674	−1.6	31	29	3,760	1.7	33	30	3,617	−5.7	32	30	3,706	−.8	30
600	29	4,094	−15.6	54	----	----	----	----	30	4,053	−16.6	54	30	4,304	−5.2	----	29	4,397	−1.2	----	30	4,234	−9.2	32	30	4,337	−5.2	31
550	28	4,752	−19.0	51	----	----	----	----	30	4,701	−20.2	----	29	4,982	−9.6	----	29	5,087	−5.1	----	30	4,907	−12.9	31	30	5,014	−10.0	33
500	28	5,452	−23.5	----	----	----	----	----	30	5,402	−24.7	----	29	5,710	−14.7	----	28	5,828	−10.0	----	30	5,623	−17.5	30	30	5,742	−15.1	----
450	28	6,216	−28.9	----	----	----	----	----	30	6,166	−29.4	----	29	6,507	−20.4	----	28	6,636	−16.2	----	30	6,411	−23.0	----	30	6,531	−20.8	----
400	28	7,047	−35.1	----	----	----	----	----	30	6,994	−34.7	----	29	7,365	−26.6	----	28	7,507	−22.8	----	30	7,257	−29.2	----	29	7,389	−27.3	----
350	28	7,966	−41.2	----	----	----	----	----	30	7,917	−39.9	----	27	8,328	−33.0	----	28	8,472	−30.1	----	30	8,198	−35.6	----	29	8,336	−34.7	----
300	26	9,003	−46.6	----	----	----	----	----	29	8,961	−45.3	----	26	9,396	−40.0	----	28	9,551	−38.1	----	29	9,252	−43.1	----	28	9,392	−42.4	----
250	23	10,215	−51.3	----	----	----	----	----	29	10,163	−50.0	----	26	10,622	−47.2	----	28	10,782	−46.9	----	29	10,458	−50.4	----	28	10,601	−50.6	----
200	23	11,656	−53.2	----	----	----	----	----	29	11,612	−51.8	----	25	12,077	−55.1	----	27	12,223	−57.2	----	28	11,898	−55.0	----	28	12,030	−57.8	----
175	22	12,513	−53.9	----	----	----	----	----	26	12,468	−51.9	----	22	12,921	−59.4	----	27	13,057	−62.1	----	27	12,755	−56.5	----	27	12,860	−61.1	----
150	20	13,514	−55.3	----	----	----	----	----	23	13,467	−52.9	----	17	13,904	−62.6	----	25	13,992	−66.5	----	25	13,740	−59.2	----	18	13,806	−61.3	----
125	18	14,661	−57.3	----	----	----	----	----	16	14,675	−55.6	----	17	15,018	−66.2	----	25	15,083	−70.7	----	14	14,898	−63.2	----	16	14,940	−64.0	----
100	11	16,017	−59.0	----	----	----	----	----	10	16,112	−56.6	----	11	16,362	−69.4	----	19	16,394	−75.0	----	7	16,266	−65.8	----	9	16,310	−66.9	----
80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	16	17,688	−73.4	----	----	----	----	----	5	17,674	−66.3	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	19,404	−66.2	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during November 1949*—Continued

Standard pressure surface (mb.)	El Paso, Tex. (886.0 mb.)				Ely, Nev. (814.6 mb.)				Glasgow, Mont. (938.1 mb.)				Grand Junction, Colo. (858.4 mb.)				Great Falls, Mont. (887.5 mb.)				Greensboro, N. C. (982.9 mb.)				Hatteras, N. C. (1,014.1 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	1,195	13.0	37	30	1,908	1.6	62	30	648	4.4	56	30	1,474	6.2	52	30	1,128	8.5	44	30	273	7.0	74	30	3	13.4	73
1,000	30	156	(*)	----	30	200	(*)	----	30	118	(*)	----	30	193	(*)	----	30	125	(*)	----	30	129	(*)	----	30	121	13.6	65
950	30	605	(*)	----	30	635	(*)	----	30	546	(*)	----	30	633	(*)	----	30	566	(*)	----	30	555	10.0	52	30	557	11.7	54
900	30	1,069	(*)	----	30	1,086	(*)	----	30	989	8.8	40	30	1,083	(*)	----	30	1,015	(*)	----	30	1,003	7.5	51	30	1,003	9.4	48
850	30	1,547	15.4	28	30	1,557	(*)	----	30	1,460	6.4	38	30	1,555	10.1	43	30	1,487	9.2	38	30	1,472	5.1	53	30	1,475	7.3	44
800	30	2,057	12.3	27	30	2,057	9.0	45	30	1,954	3.3	40	30	2,058	9.0	38	30	1,985	5.7	39	30	1,965	3.1	49	30	1,972	4.9	43
750	30	2,600	8.9	26	30	2,595	7.5	37	30	2,479	−.1	42	30	2,595	6.8	36	30	2,514	2.1	39	30	2,490	.4	47	30	2,498	2.4	42
700	30	3,162	5.6	23	30	3,155	3.9	36	30	3,023	−3.6	44	30	3,154	3.4	35	30	3,063	−1.7	40	30	3,036	−2.3	43	30	3,050	−.2	39
650	30	3,768	1.6	----	30	3,754	.0	36	30	3,610	−7.1	46	30	3,754	−.1	31	30	3,655	−5.4	37	29	3,622	−5.3	40	30	3,643	−3.0	34
600	29	4,405	−2.7	----	30	4,388	−4.0	35	30	4,225	−11.1	43	30	4,387	−4.2	32	30	4,272	−9.3	35	29	4,243	−8.7	39	30	4,270	−6.5	32
550	28	5,089	−7.4	----	30	5,069	−8.6	34	30	4,890	−15.4	37	30	5,068	−8.6	31	30	4,943	−13.9	36	28	4,913	−13.1	36	30	4,945	−10.7	31
500	27	5,823	−12.6	----	30	5,801	−13.4	----	28	5,611	−19.9	----	30	5,799	−13.6	33	30	5,656	−18.5	38	28	5,630	−17.9	35	30	5,671	−15.6	33
450	26	6,625	−18.3	----	30	6,602	−19.2	----	28	6,386	−25.3	----	30	6,594	−19.6	35	30	6,443	−24.3	----	28	6,415	−23.0	----	30	6,464	−20.9	----
400	22	7,486	−24.9	----	30	7,460	−25.5	----	28	7,229	−31.3	----	30	7,454	−26.2	----	30	7,281	−30.6	----	28	7,263	−28.5	----	30	7,320	−26.8	----
350	22	8,442	−32.4	----	30	8,414	−33.1	----	27	8,162	−38.1	----	30	8,406	−33.3	----	30	8,215	−37.5	----	28	8,206	−35.2	----	30	8,270	−33.2	----
300	20	9,510	−41.2	----	28	9,489	−41.4	----	27	9,205	−45.7	----	30	9,469	−41.6	----	30	9,266	−44.5	----	28	9,264	−42.3	----	30	9,337	−40.0	----
250	19	10,724	−49.9	----	27	10,703	−50.0	----	26	10,397	−52.6	----	30	10,681	−50.0	----	27	10,487	−51.4	----	28	10,478	−48.6	----	29	10,569	−46.8	----
200	14	12,164	−57.4	----	25	12,138	−57.5	----	23	11,814	−55.4	----	28	12,123	−57.5	----	19	11,946	−57.1	----	28	11,929	−53.8	----	26	12,016	−54.1	----
175	12	12,994	−61.3	----	24	12,970	−60.6	----	15	12,667	−56.3	----	28	12,959	−60.8	----	18	12,787	−58.2	----	27	12,781	−56.1	----	21	12,860	−57.0	----
150	11	13,946	−66.3	----	19	13,922	−64.4	----	11	13,694	−58.5	----	23	13,907	−63.6	----	13	13,735	−58.5	----	25	13,749	−58.5	----	15	13,852	−60.0	----
125	7	15,036	−69.5	----	16	15,052	−67.0	----	5	14,856	−59.7	----	20	15,027	−66.2	----	10	14,864	−61.3	----	20	14,895	−61.6	----	9	14,986	−62.5	----
100	5	16,379	−72.3	----	5	16,398	−69.5	----	----	----	----	----	13	16,376	−68.8	----	5	16,240	−63.1	----	16	16,262	−63.1	----	5	16,338	−63.6	----
80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	17,662	−63.9	----	----	----	----	----

Standard pressure surface (mb.)	Havana, Cuba [1] (—— mb.)				Honolulu, T. H. 1,015.7 mb.)				International Falls, Minn. (966.8 mb.)				Joliet, Ill. (991.2 mb.)				Lake Charles, La. (1,018.6 mb.)				Lander, Wyo. (831.5 mb.)				Las Vegas, Nev. (942.0 mb.)			
Surface	----	----	----	----	30	3	24.6	63	30	360	−1.6	82	30	178	3.6	75	30	5	13.4	81	30	1,696	4.8	53	30	660	13.2	32
1,000	----	----	----	----	30	139	22.8	66	30	89	(*)	----	30	104	(*)	----	30	161	16.5	64	30	154	(*)	----	30	149	(*)	----
950	----	----	----	----	30	586	19.3	71	30	501	−1.5	79	30	525	4.4	65	30	600	14.5	54	30	592	(*)	----	30	590	(*)	----
900	----	----	----	----	30	1,047	15.7	76	30	928	−3.1	77	30	962	2.1	63	30	1,052	12.4	46	30	1,044	(*)	----	30	1,052	19.4	23
850	----	----	----	----	30	1,531	12.6	77	30	1,381	−3.5	67	30	1,422	.3	57	30	1,531	11.3	33	30	1,514	(*)	----	30	1,540	16.5	22
800	----	----	----	----	30	2,039	11.4	57	30	1,859	−4.7	57	30	1,906	−1.8	56	30	2,036	9.3	26	30	2,015	9.0	35	30	2,052	13.2	23
750	----	----	----	----	30	2,585	10.9	33	30	2,371	−6.7	57	30	2,422	−4.1	55	30	2,575	6.7	25	30	2,552	5.9	34	30	2,594	9.5	24
700	----	----	----	----	30	3,151	8.2	29	30	2,902	−9.1	57	30	2,959	−6.6	55	30	3,131	3.6	26	30	3,108	2.5	34	30	3,159	5.8	23
650	----	----	----	----	29	3,761	4.6	29	30	3,478	−11.7	50	30	3,544	−9.1	51	29	3,729	.5	----	30	3,708	−1.5	35	30	3,765	2.0	23
600	----	----	----	----	29	4,405	.7	----	30	4,081	−15.2	49	30	4,151	−12.6	46	29	4,365	−3.4	----	30	4,335	−5.6	34	30	4,402	−2.3	----
550	----	----	----	----	29	5,096	−3.5	----	30	4,737	−18.8	50	30	4,812	−16.9	41	29	5,048	−7.9	----	30	5,015	−10.2	32	30	5,086	−6.7	----
500	----	----	----	----	28	5,846	−8.4	----	30	5,438	−23.1	----	30	5,518	−21.7	----	29	5,781	−13.2	----	30	5,739	−15.3	33	30	5,824	−12.1	----
450	----	----	----	----	28	6,662	−14.1	----	30	6,205	−28.5	----	30	6,293	−27.0	----	29	6,582	−19.0	----	30	6,534	−21.1	----	30	6,629	−18.2	----
400	----	----	----	----	28	7,540	−20.8	----	29	7,043	−34.0	----	30	7,126	−32.6	----	29	7,440	−25.5	----	30	7,384	−27.8	----	30	7,491	−25.1	----
350	----	----	----	----	28	8,512	−28.4	----	29	7,965	−40.5	----	30	8,053	−39.1	----	28	8,397	−32.4	----	30	8,329	−34.9	----	30	8,446	−32.7	----
300	----	----	----	----	27	9,601	−36.4	----	29	8,999	−47.0	----	30	9,096	−44.8	----	28	9,465	−39.9	----	30	9,386	−42.8	----	29	9,524	−41.0	----
250	----	----	----	----	26	10,843	−45.3	----	27	10,187	−52.2	----	30	10,300	−50.4	----	28	10,689	−47.5	----	30	10,592	−51.2	----	28	10,739	−49.7	----
200	----	----	----	----	24	12,298	−55.1	----	20	11,644	−52.3	----	28	11,751	−53.4	----	27	12,137	−55.5	----	28	12,010	−58.0	----	27	12,173	−57.8	----
175	----	----	----	----	24	13,140	−60.5	----	18	12,513	−52.8	----	27	12,610	−54.8	----	25	12,978	−59.4	----	27	12,850	−60.7	----	25	13,001	−61.4	----
150	----	----	----	----	20	14,080	−65.4	----	13	13,483	−52.3	----	25	13,584	−56.4	----	25	13,933	−63.3	----	25	13,814	−62.6	----	23	13,955	−64.5	----
125	----	----	----	----	17	15,173	−70.5	----	----	----	----	----	21	14,729	−58.7	----	25	15,042	−67.1	----	24	14,937	−64.3	----	17	15,056	−67.9	----
100	----	----	----	----	13	16,490	−72.9	----	----	----	----	----	13	16,141	−59.8	----	23	16,376	−71.0	----	20	16,288	−65.8	----	16	16,398	−69.9	----
80	----	----	----	----	7	17,806	−72.7	----	----	----	----	----	----	----	----	----	15	17,689	−71.3	----	10	17,608	−66.1	----	12	17,725	−70.3	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	8	19,402	−66.6	----	----	----	----	----	7	19,441	−66.9	----

Standard pressure surface (mb.)	Little Rock, Ark. (1,008.2 mb.)				Mazatlan, Mex. (1,010.9 mb.)				Medford, Oreg. (972.2 mb.)				Merida, Mex. (1,014.8 mb.)				Miami, Fla. (1,016.9 mb.)				Nantucket, Mass. (1,009.6 mb.)				Nashville, Tenn. (995.6 mb.)			
Surface	29	79	10.9	62	30	14	25.2	76	30	401	7.5	84	30	27	22.2	73	30	4	19.0	78	30	14	7.7	82	30	177	8.1	67
1,000	29	147	12.6	55	30	109	24.5	76	30	167	(*)	----	30	155	22.0	72	30	148	20.4	69	30	93	8.1	75	30	160	(*)	----
950	29	578	13.2	48	30	570	24.8	44	30	598	11.6	69	30	599	19.0	73	30	593	17.9	67	30	518	5.9	72	30	569	8.7	52
900	29	1,031	10.7	47	30	1,032	22.5	37	30	1,047	12.8	48	30	1,062	15.7	73	30	1,051	15.0	65	30	957	3.7	70	30	1,010	6.5	51
850	29	1,506	9.0	41	30	1,527	19.4	35	30	1,525	10.7	45	30	1,546	13.0	66	30	1,533	13.0	54	30	1,420	1.9	63	30	1,478	4.6	48
800	29	2,005	7.0	37	30	2,044	15.9	31	30	2,027	7.3	47	30	2,054	10.8	53	30	2,042	11.4	43	30	1,907	.1	59	30	1,970	2.4	46
750	29	2,538	4.5	38	30	2,594	11.9	33	30	2,556	4.4	42	30	2,595	9.0	39	30	2,584	9.3	----	30	2,428	−1.9	53	30	2,495	−.2	45
700	29	3,092	1.5	38	30	3,162	8.0	34	30	3,113	1.3	44	30	3,160	7.5	----	30	3,148	6.8	----	30	2,968	−4.8	49	30	3,038	−2.7	40
650	28	3,689	−1.7	34	30	3,777	4.3	27	30	3,706	−2.7	38	30	3,770	4.7	----	30	3,756	3.8	----	30	3,556	−7.8	47	30	3,627	−5.5	37
600	28	4,317	−5.2	28	30	4,417	.4	----	30	4,335	−6.7	36	30	4,417	1.4	----	30	4,399	.0	----	29	4,173	−11.1	43	30	4,246	−8.8	31
550	27	4,995	−9.4	28	29	5,112	−3.9	----	30	5,010	−11.2	37	30	5,110	−2.8	----	29	5,092	−4.1	----	29	4,831	−14.8	37	29	4,919	−12.6	31
500	27	5,724	−14.4	----	29	5,855	−9.4	----	30	5,734	−16.1	40	30	5,861	−7.2	----	29	5,836	−8.9	----	28	5,538	−19.7	----	29	5,640	−17.3	30
450	27	6,518	−20.2	----	29	6,674	−15.3	----	30	6,523	−21.7	----	30	6,678	−13.0	----	29	6,652	−14.4	----	27	6,327	−24.6	----	29	6,427	−22.8	----
400	27	7,375	−27.3	----	28	7,541	−21.9	----	29	7,375	−27.8	----	30	7,560	−19.3	----	28	7,530	−20.5	----	27	7,164	−29.9	----	29	7,274	−28.9	----
350	26	8,328	−34.1	----	27	8,512	−28.9	----	29	8,321	−34.9	----	30	8,538	−26.8	----	27	8,504	−27.1	----	26	8,097	−36.5	----	29	8,215	−36.0	----
300	26	9,390	−41.5	----	26	9,593	−37.3	----	29	9,380	−42.4	----	30	9,631	−35.0	----	27	9,596	−34.8	----	25	9,145	−43.9	----	29	9,270	−42.5	----
250	26	10,608	−48.1	----	24	10,826	−47.0	----	28	10,585	−50.4	----	30	10,877	−44.9	----	27	10,844	−44.3	----	24	10,343	−49.4	----	29	10,481	−49.2	----
200	24	12,054	−54.4	----	24	12,271	−57.0	----	25	12,012	−56.1	----	30	12,329	−56.7	----	22	12,303	−55.7	----	23	11,793	−53.2	----	28	11,934	−54.5	----
175	24	12,903	−57.2	----	22	13,109	−61.6	----	22	12,868	−59.0	----	30	13,163	−63.0	----	18	13,120	−61.1	----	21	12,661	−55.0	----	27	12,783	−56.8	----
150	21	13,855	−60.5	----	21	14,055	−65.8	----	20	13,828	−61.6	----	29	14,096	−69.3	----	9	14,066	−65.8	----	20	13,649	−56.6	----	22	13,749	−60.1	----
125	19	14,989	−63.3	----	19	15,149	−69.8	----	8	14,945	−64.4	----	27	15,167	−74.8	----	----	----	----	----	18	14,810	−59.0	----	20	14,886	−62.8	----
100	14	16,342	−66.2	----	18	16,468	−73.2	----	----	----	----	----	23	16,448	−79.2	----	----	----	----	----	10	16,224	−60.4	----	12	16,244	−65.4	----
80	----	----	----	----	15	17,774	−73.7	----	----	----	----	----	16	17,719	−77.8	----	----	----	----	----	----	----	----	----	5	17,613	−64.7	----
60	----	----	----	----	9	19,473	−68.1	----	----	----	----	----	8	19,418	−68.2	----	----	----	----	----	----	----	----	----	----	----	----	----
50	----	----	----	----	5	20,582	−64.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during November 1949*—Continued

Standard pressure surface (mb.)	New Orleans, La. (1,019.5 mb.)				North Platte, Nebr. (918.3 mb.)				Oakland, Calif. (1,018.4 mb.)				Oklahoma City, Okla. (972.3 mb.)				Omaha, Nebr. (978.4 mb.)				Phoenix, Ariz. (977.0 mb.)				Pittsburgh, Pa. (967.4 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	2	12.8	82	30	849	5.0	64	29	6	14.4	78	29	391	10.3	57	29	308	7.8	56	29	339	16.1	50	30	382	4.6	72
1,000	30	165	15.9	68	30	138	(*)	----	29	161	16.7	67	29	154	(*)	----	29	125	(*)	----	29	139	(*)	----	30	110	(*)	----
950	30	603	14.2	57	30	568	(*)	----	29	604	17.1	52	29	590	14.3	43	29	552	8.7	48	29	586	24.2	25	30	534	4.8	68
900	30	1,055	12.2	49	30	1,015	9.9	45	29	1,058	15.7	43	29	1,041	13.3	36	29	997	7.5	48	29	1,053	21.5	22	30	969	2.6	67
850	30	1,533	10.8	36	30	1,489	8.9	36	29	1,541	13.4	39	29	1,520	11.1	36	29	1,466	5.7	42	29	1,544	18.1	22	30	1,429	.1	66
800	30	2,036	8.9	30	30	1,989	6.2	36	29	2,048	10.5	35	29	2,023	8.4	33	29	1,959	3.2	40	29	2,059	14.5	24	30	1,913	−2.1	60
750	30	2,571	6.6	25	30	2,517	3.0	38	29	2,586	7.3	35	29	2,558	5.8	32	29	2,488	.5	38	29	2,605	10.8	24	30	2,431	−4.3	53
700	30	3,131	4.0	24	30	3,070	−.2	38	29	3,146	3.9	36	29	3,115	2.8	29	29	3,031	−2.4	36	29	3,170	7.4	21	30	2,964	−6.9	54
650	30	3,727	.5	----	30	3,662	−3.9	41	29	3,746	.1	37	29	3,714	−.6	26	29	3,621	−5.6	35	28	3,786	3.8	----	30	3,548	−10.0	50
600	29	4,367	−3.0	----	30	4,286	−7.8	40	29	4,380	−4.1	37	29	4,345	−4.5	----	29	4,239	−9.1	36	28	4,426	−.8	----	30	4,152	−13.6	48
550	29	5,047	−7.4	----	30	4,961	−12.1	40	29	5,061	−8.7	35	29	5,023	−8.8	----	28	4,910	−12.9	37	28	5,113	−5.7	----	30	4,813	−17.5	43
500	29	5,786	−12.4	----	28	5,682	−16.6	----	29	5,792	−13.8	33	29	5,756	−13.8	----	28	5,628	−17.6	39	28	5,853	−10.9	----	30	5,516	−21.6	----
450	27	6,585	−18.0	----	28	6,471	−22.4	----	29	6,595	−19.4	36	29	6,550	−20.0	----	28	6,419	−22.8	----	27	6,663	−16.8	----	30	6,292	−26.5	----
400	27	7,454	−24.1	----	28	7,319	−28.7	----	29	7,450	−25.9	----	29	7,410	−26.8	----	28	7,265	−28.9	----	27	7,529	−23.7	----	30	7,127	−32.5	----
350	26	8,416	−31.2	----	26	8,266	−35.5	----	29	8,402	−33.4	----	29	8,358	−34.0	----	28	8,206	−35.8	----	27	8,488	−31.8	----	29	8,050	−38.6	----
300	24	9,494	−38.6	----	25	9,322	−43.5	----	29	9,465	−41.8	----	28	9,421	−41.9	----	28	9,261	−43.1	----	27	9,557	−40.5	----	28	9,099	−44.7	----
250	24	10,726	−46.2	----	24	10,531	−51.5	----	29	10,677	−50.0	----	28	10,634	−49.8	----	27	10,475	−50.6	----	26	10,770	−49.2	----	25	10,304	−49.8	----
200	24	12,179	−54.6	----	24	11,955	−58.2	----	26	12,130	−57.5	----	25	12,067	−57.6	----	26	11,909	−56.0	----	25	12,205	−57.0	----	21	11,766	−52.5	----
175	24	13,025	−58.8	----	23	12,788	−60.6	----	24	12,969	−60.5	----	24	12,907	−60.4	----	26	12,755	−57.1	----	23	13,047	−60.3	----	19	12,624	−54.3	----
150	22	13,987	−63.0	----	21	13,751	−61.9	----	22	13,925	−62.9	----	22	13,853	−63.0	----	24	13,726	−59.2	----	19	13,999	−64.2	----	14	13,619	−56.7	----
125	21	15,099	−66.7	----	18	14,875	−63.7	----	18	15,044	−66.1	----	14	14,956	−65.6	----	23	14,866	−61.7	----	16	15,087	−67.1	----	----	----	----	----
100	17	16,423	−69.6	----	15	16,251	−66.0	----	11	16,394	−69.6	----	----	----	----	----	21	16,251	−63.7	----	11	16,452	−69.5	----	----	----	----	----
80	16	17,762	−68.4	----	6	17,611	−64.7	----	6	17,711	−69.5	----	----	----	----	----	14	17,633	−63.6	----	----	----	----	----	----	----	----	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	19,385	−63.4	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Portland, Maine (1,008.6 mb.)				Rapid City, S. Dak. (902.8 mb.)				St. Cloud, Minn. (973.5 mb.)				San Antonio, Tex. (991.1 mb.)				San Juan, P. R.[2] (1,011.8 mb.)				Santa Maria, Calif. (1,009.8 mb.)				Sault Ste. Marie, Mich. (983.0 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	20	2.0	84	30	980	5.4	54	30	317	.7	79	30	240	14.1	67	22	19	24.3	89	30	71	13.4	77	30	221	−0.8	80
1,000	30	89	2.8	76	30	127	(*)	----	30	100	(*)	----	30	163	(*)	----	29	120	24.4	84	30	153	15.6	66	30	82	(*)	----
950	30	508	1.9	76	30	562	(*)	----	30	520	1.9	73	30	606	19.0	45	29	575	22.0	81	30	596	19.3	40	30	497	−2.1	78
900	30	939	−.5	67	30	1,007	(*)	----	30	949	1.2	65	30	1,065	16.0	46	29	1,038	19.2	80	30	1,056	18.3	31	30	921	−3.9	78
850	30	1,394	−2.6	69	30	1,479	8.7	38	30	1,409	.5	56	30	1,548	13.2	45	29	1,530	16.3	76	30	1,543	15.6	28	30	1,370	−5.7	73
800	30	1,874	−4.5	65	30	1,977	5.3	38	30	1,894	−1.2	54	30	2,055	10.9	34	29	2,043	13.8	70	30	2,053	12.3	28	30	1,844	−7.8	70
750	30	2,388	−6.0	57	30	2,507	2.1	39	30	2,413	−3.8	51	30	2,595	8.0	28	29	2,593	11.3	64	30	2,593	8.9	27	30	2,350	−9.7	64
700	30	2,919	−8.2	56	30	3,054	−1.4	41	30	2,949	−6.5	50	30	3,156	5.2	24	29	3,160	8.6	52	30	3,157	5.3	25	30	2,874	−11.9	61
650	30	3,498	−11.2	53	30	3,646	−5.1	40	30	3,531	−9.3	50	30	3,758	1.7	22	29	3,779	5.5	46	30	3,761	1.5	----	30	3,444	−14.2	55
600	30	4,102	−14.8	52	30	4,264	−8.7	39	30	4,140	−12.5	47	29	4,397	−2.1	----	29	4,421	2.1	38	30	4,398	−2.7	----	30	4,042	−17.1	49
550	30	4,757	−18.3	44	30	4,938	−12.6	37	29	4,800	−17.0	47	29	5,079	−6.7	----	29	5,119	−1.7	----	30	5,078	−7.0	----	30	4,696	−20.6	----
500	29	5,456	−22.8	----	30	5,653	−17.4	35	29	5,505	−21.7	----	29	5,819	−11.9	----	29	5,870	−6.2	----	30	5,818	−12.2	----	28	5,387	−25.1	----
450	28	6,230	−27.8	----	30	6,441	−23.0	----	29	6,274	−27.3	----	29	6,623	−18.0	----	29	6,693	−11.3	----	30	6,622	−18.0	----	28	6,154	−30.3	----
400	26	7,074	−32.8	----	29	7,285	−29.3	----	29	7,111	−33.2	----	29	7,486	−24.6	----	28	7,581	−17.8	----	30	7,486	−24.7	----	28	6,973	−36.2	----
350	24	8,012	−38.8	----	28	8,228	−36.1	----	28	8,026	−39.6	----	29	8,443	−31.7	----	28	8,565	−24.9	----	29	8,442	−32.3	----	28	7,888	−42.5	----
300	22	9,069	−45.2	----	27	9,289	−43.3	----	28	9,067	−45.3	----	27	9,512	−39.6	----	28	9,667	−33.4	----	29	9,510	−40.7	----	28	8,915	−47.9	----
250	18	10,281	−50.3	----	27	10,496	−50.8	----	27	10,265	−50.4	----	26	10,736	−47.4	----	27	10,919	−43.8	----	29	10,727	−49.6	----	26	10,097	−51.3	----
200	16	11,727	−53.7	----	27	11,926	−56.6	----	26	11,711	−53.3	----	25	12,186	−54.8	----	27	12,380	−55.2	----	27	12,162	−57.4	----	23	11,548	−51.1	----
175	16	12,585	−54.3	----	24	12,772	−57.8	----	25	12,560	−53.2	----	22	13,030	−57.9	----	26	13,220	−61.5	----	25	13,001	−60.8	----	19	12,413	−51.5	----
150	12	13,554	−55.2	----	21	13,758	−59.3	----	21	13,539	−54.4	----	17	13,991	−62.5	----	25	14,158	−68.2	----	25	13,952	−63.6	----	15	13,410	−62.7	----
125	10	14,718	−58.3	----	17	14,906	−61.9	----	20	14,703	−56.0	----	14	15,108	−65.8	----	22	15,233	−74.3	----	19	15,057	−65.8	----	9	14,611	−55.7	----
100	6	16,145	−57.9	----	7	16,273	−65.4	----	15	16,127	−58.3	----	9	16,453	−69.7	----	18	16,516	−78.9	----	16	16,405	−67.1	----	----	----	----	----
80	----	----	----	----	----	----	----	----	----	----	----	----	6	17,794	−69.7	----	6	17,700	−78.0	----	7	17,790	−67.7	----	----	----	----	----

Standard pressure surface (mb.)	Spokane, Wash. (934.7 mb.)				Swan Island, W. I. (1,013.1 mb.)				Tacubaya, Mexico (775.3 mb.)				Tampa, Fla. (1,017.6 mb.)				Tatoosh Island, Wash. (1,010.5 mb.)				Toledo, Ohio (988.7 mb.)				Washington, D. C. (1,010.8 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	721	5.2	83	30	10	25.3	78	28	2,306	12.5	43	30	9	15.6	81	30	31	10.6	84	30	191	3.4	81	30	25	8.4	64
1,000	30	164	(*)	----	30	124	24.4	79	28	105	(*)	----	30	158	17.6	68	30	118	(*)	----	30	97	(*)	----	30	113	8.6	61
950	30	590	(*)	----	30	573	21.2	82	28	560	(*)	----	30	595	15.1	64	30	553	10.4	69	30	519	3.6	72	30	537	6.9	56
900	30	1,032	7.3	69	30	1,040	18.0	83	28	1,032	(*)	----	30	1,051	12.9	54	30	994	8.2	67	30	953	.1	69	30	979	4.3	60
850	30	1,502	6.3	59	30	1,529	15.3	80	28	1,521	(*)	----	30	1,531	11.3	43	30	1,464	5.6	66	30	1,411	−1.1	63	30	1,442	1.8	61
800	30	1,997	4.2	54	30	2,042	13.4	67	28	2,042	(*)	----	30	2,036	9.8	33	30	1,958	2.9	65	30	1,893	−2.8	58	30	1,928	−.6	60
750	30	2,525	1.5	51	30	2,589	11.1	60	28	2,588	11.5	42	30	2,576	7.5	31	30	2,487	.1	65	30	2,411	−5.2	54	30	2,446	−2.8	57
700	30	3,072	−1.8	54	30	3,158	8.5	57	28	3,157	8.0	45	30	3,135	4.9	----	30	3,027	−3.0	64	30	2,942	−7.8	54	30	2,987	−5.1	53
650	30	3,662	−5.0	50	30	3,772	5.0	58	28	3,771	4.0	48	30	3,740	1.8	----	30	3,616	−6.8	62	30	3,525	−10.7	54	30	3,570	−7.9	48
600	30	4,284	−8.8	51	30	4,416	1.3	56	28	4,412	.7	38	30	4,377	−1.9	----	30	4,231	−10.5	61	29	4,129	−14.3	50	29	4,185	−11.3	45
550	30	4,954	−13.0	52	29	5,114	−2.4	49	28	5,110	−2.5	----	30	5,065	−6.0	----	30	4,896	−14.8	60	29	4,788	−18.6	47	29	4,851	−15.6	43
500	30	5,672	−17.8	48	29	5,864	−6.6	46	28	5,858	−7.2	----	30	5,803	−10.9	----	30	5,609	−19.4	56	29	5,488	−23.4	----	29	5,561	−20.0	37
450	30	6,456	−23.4	----	29	6,689	−11.7	40	28	6,683	−12.9	----	30	6,612	−16.7	----	30	6,390	−24.5	----	29	6,256	−28.8	----	29	6,341	−25.1	----
400	30	7,302	−29.7	----	29	7,573	−17.5	----	28	7,550	−19.5	----	30	7,479	−22.8	----	30	7,232	−30.4	----	28	7,091	−34.1	----	29	7,180	−31.0	----
350	30	8,239	−36.9	----	29	8,559	−24.6	----	27	8,536	−27.2	----	30	8,445	−29.5	----	30	8,168	−36.7	----	28	8,013	−39.9	----	29	8,115	−37.0	----
300	26	9,272	−44.6	----	28	9,663	−33.2	----	27	9,627	−35.9	----	28	9,524	−36.9	----	28	9,225	−43.2	----	26	9,061	−44.9	----	29	9,165	−44.0	----
250	24	10,498	−50.2	----	27	10,916	−43.6	----	27	10,869	−45.4	----	26	10,768	−45.8	----	25	10,441	−49.0	----	26	10,267	−48.9	----	29	10,371	−49.5	----
200	16	11,969	−55.8	----	27	12,376	−55.6	----	27	12,321	−56.8	----	24	12,218	−56.4	----	20	11,917	−54.7	----	25	11,719	−52.6	----	29	11,818	−53.3	----
175	15	12,819	−58.5	----	25	13,212	−61.9	----	25	13,156	−62.9	----	23	13,051	−61.7	----	19	12,762	−56.2	----	22	12,572	−53.3	----	29	12,674	−55.3	----
150	10	13,778	−59.4	----	22	14,152	−68.4	----	23	14,097	−68.0	----	22	13,998	−65.7	----	16	13,762	−56.7	----	20	13,578	−56.1	----	27	13,650	−56.7	----
125	5	14,968	−61.4	----	8	15,219	−74.3	----	23	15,180	−72.2	----	18	15,098	−69.8	----	9	14,964	−60.0	----	15	14,763	−59.4	----	27	14,789	−59.7	----
100	----	----	----	----	----	----	----	----	20	16,483	−76.4	----	15	16,419	−73.0	----	----	----	----	----	13	16,146	−61.9	----	25	16,188	−61.8	----
80	----	----	----	----	----	----	----	----	14	17,750	−77.0	----	11	17,725	−70.9	----	----	----	----	----	5	17,520	−63.6	----	18	17,557	−62.7	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9	19,348	−62.4	----

[1] Data not yet received.

[2] Elevation changed from 15 to 19 meters on Nov. 9, 1949.

(*) Temperature and relative humidity data for this level are not available or are available only for certain days. See note entitled "Change in Summarization of Radiosonde Data," p. 6, in the January 1946 issue of the MONTHLY WEATHER REVIEW.

NOTE.—All observations scheduled between 0300 and 0500, G. C. T. except at Ciudad Victoria, Mazatlan and Merida, where they are taken near 0200, G. C. T. "Number of observations" refers to those of dynamic height only. (In a few cases temperature or humidity data may be missing for one or more standard pressure surfaces of some observations.) Relative humidity data are not published for standard pressure surfaces having a corresponding mean temperature below −20° C. Relative humidity data beginning with Oct. 1, 1948, are computed and expressed in these tables on the basis of the vapor pressure over water. Upper air values of relative humidity at levels with temperatures less then 0° C. have formerly been computed and expressed on the basis of the vapor pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the values occurring below the operating range of the humidity element. For explanation of the adjustment see article entitled "Curve Method for Obtaining Monthly Means of Relative Humidity," p. 241, MONTHLY WEATHER REVIEW, December 1944.

None of the means included in these tables are based on less than 15 observations at the surface or 5 observations at a standard pressure level.

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 2200 G. C. T. during November 1949. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Abilene, Tex. (534 m.)			Albuquerque, N. Mex. (1,627 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (505 m.)			Boise, Idaho (868 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (100 m.)			Charleston, S. C. (16 m.)			Cincinnati, Ohio (273 m.)			El Paso, Tex. (1,198 m.)			Ely, Nev. (1,910 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	264	1.7	30	218	0.8	30	286	3.6	30	252	4.5	30	300	4.9	28	336	1.1	30	134	1.8	27	262	2.0	25	184	1.8	30	272	3.3	29	244	4.7	30	268	1.0	30	305	1.3
500	---	---	---	---	---	---	30	283	4.6	---	---	---	---	---	---	---	---	---	30	134	1.8	27	253	4.4	25	217	4.3	30	266	5.1	29	248	6.7	---	---	---	---	---	---
1,000	30	249	2.5	---	---	---	30	284	6.0	---	---	---	30	299	7.2	28	306	.6	29	215	1.0	24	246	8.1	25	240	6.0	28	272	7.0	29	254	8.3	---	---	---	---	---	---
1,500	30	268	3.3	---	---	---	29	287	7.7	30	265	9.4	29	304	9.8	28	195	2.0	27	290	1.1	18	252	12.0	18	260	7.9	28	278	9.4	27	268	11.1	30	269	1.4	---	---	---
2,000	30	277	4.3	30	258	1.6	29	289	10.0	30	282	11.8	29	308	12.0	28	232	3.2	25	338	3.2	11	254	11.7	12	271	9.6	28	281	10.8	25	274	12.4	30	297	2.1	30	293	1.3
2,500	30	286	5.7	30	299	3.8	26	294	12.0	30	289	13.4	27	308	13.0	27	256	4.9	23	337	4.6	---	---	---	10	266	11.3	26	281	12.3	21	276	14.1	30	300	2.6	30	253	1.8
3,000	30	293	6.9	30	307	6.2	25	295	13.4	29	291	13.6	26	308	14.0	27	265	7.0	22	332	5.4	---	---	---	---	---	---	25	276	13.8	17	276	15.6	30	304	3.5	29	273	2.7
4,000	29	303	8.8	29	311	7.1	24	284	16.4	25	301	16.1	23	305	16.9	23	275	10.3	21	322	6.5	---	---	---	---	---	---	22	272	17.0	14	292	15.4	28	314	4.4	29	294	5.1
5,000	27	303	8.7	29	307	7.2	22	281	19.7	23	303	20.5	18	312	19.0	23	280	13.0	21	311	6.4	---	---	---	---	---	---	18	270	18.1	11	292	17.5	28	310	4.7	26	288	7.8
6,000	23	314	10.6	29	306	8.6	16	278	19.5	19	304	21.4	16	314	21.1	20	273	13.5	19	302	9.0	---	---	---	---	---	---	16	266	20.7	11	294	19.3	28	316	5.7	24	288	9.1
8,000	21	305	11.8	25	313	10.6	---	---	---	---	---	---	---	---	---	11	278	11.4	15	277	14.8	---	---	---	---	---	---	10	262	25.9	---	---	---	25	326	6.7	19	277	10.6
10,000	19	310	16.7	20	309	11.7	---	---	---	---	---	---	---	---	---	---	---	---	13	280	19.0	---	---	---	---	---	---	---	---	---	---	---	---	19	310	8.8	11	270	12.2
12,000	14	286	15.7	16	306	11.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11	302	11.1	---	---	---
14,000	---	---	---	10	306	13.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Grand Junction, Colo. (1,475 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (663 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)			New York, N. Y. (15 m.)			Oakland, Calif. (8 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	287	0.7	30	259	2.8	30	261	4.8	29	286	2.0	30	255	3.7	30	131	0.4	30	258	4.7	28	270	0.1	30	28	0.9	30	302	1.8	30	252	2.8	29	300	2.1	29	268	2.0
500	---	---	---	30	254	4.1	---	---	---	29	274	4.1	30	261	5.7	---	---	---	30	258	4.7	28	135	.1	30	18	1.8	30	292	3.4	30	241	4.4	29	273	4.4	29	23	.9
1,000	---	---	---	30	263	5.9	30	263	7.9	29	277	5.1	28	267	7.4	30	90	.2	30	272	5.6	28	175	1.9	30	351	1.7	28	311	4.8	29	253	5.9	25	270	6.8	29	302	.8
1,500	30	282	.8	29	277	7.8	30	271	11.2	28	281	7.6	22	266	10.9	30	348	1.3	30	283	7.6	27	198	5.1	29	308	2.0	26	316	7.8	25	271	8.4	25	277	8.9	29	266	1.4
2,000	30	276	1.0	27	283	10.4	30	281	12.6	25	288	9.8	19	274	12.6	30	336	1.2	29	204	10.5	25	215	6.4	27	302	2.7	26	308	9.5	25	271	8.4	20	269	10.7	29	239	2.2
2,500	30	268	2.0	25	285	11.5	29	292	13.7	25	287	10.9	15	271	11.9	30	347	.8	28	301	13.0	22	216	8.5	26	291	4.0	26	304	10.5	23	284	11.8	17	264	12.9	27	224	2.5
3,000	29	289	3.9	23	285	13.4	25	295	12.9	25	277	12.3	12	282	14.4	30	63	.4	27	303	15.1	20	225	9.8	25	262	5.5	24	293	11.7	21	283	14.2	11	278	9.7	26	242	3.2
4,000	27	308	8.1	20	281	15.0	14	306	11.9	24	276	14.7	---	---	---	30	270	1.4	24	303	17.1	17	238	11.3	25	260	8.2	22	292	13.4	21	288	15.8	---	---	---	26	236	4.2
5,000	27	312	11.4	19	281	16.7	11	304	13.2	23	270	16.8	---	---	---	28	267	2.2	22	304	18.3	16	232	15.8	20	256	9.7	18	287	15.0	19	285	17.8	---	---	---	25	245	6.2
6,000	26	307	13.4	16	283	18.5	---	---	---	22	263	18.6	---	---	---	27	269	1.6	19	307	18.9	14	222	14.6	16	261	12.9	14	280	16.6	18	286	18.5	---	---	---	24	244	7.2
8,000	22	304	15.9	---	---	---	---	---	---	13	268	24.7	---	---	---	26	273	2.6	11	306	20.1	---	---	---	11	264	21.8	---	---	---	17	289	20.6	---	---	---	22	243	10.0
10,000	14	298	13.3	---	---	---	---	---	---	---	---	---	---	---	---	26	287	3.1	---	---	---	---	---	---	---	---	---	---	---	---	10	292	19.7	---	---	---	14	240	8.6
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23	292	5.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19	282	6.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11	274	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Cloud, Minn. (318 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (13 m.)			Sault Ste. Marie, Mich. (221 m.)			Seattle, Wash. (116 m.)			Spokane, Wash. (725 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	266	2.2	30	302	4.1	30	133	0.6	30	312	6.4	27	294	3.2	30	259	3.6	30	222	1.8	29	288	2.8	28	328	0.5	27	202	3.3	26	201	1.9	29	261	2.3
500	30	266	2.2	30	303	4.7	30	101	.7	---	---	---	27	299	5.0	30	266	5.8	30	222	1.8	29	284	1.7	28	263	1.1	27	199	6.2	---	---	---	29	264	4.3
1,000	30	277	3.0	29	299	7.1	30	88	1.6	30	312	6.5	25	302	7.9	30	269	8.2	30	245	1.8	28	145	1.1	23	271	3.7	25	213	8.4	26	208	4.7	27	271	7.1
1,500	30	294	6.3	29	308	9.8	30	102	2.4	30	305	9.7	23	311	10.4	28	282	11.8	30	275	3.4	27	98	2.7	16	286	5.1	21	217	8.7	24	220	7.3	26	276	9.3
2,000	30	306	9.1	27	312	12.2	30	105	1.7	30	304	11.4	19	310	12.7	25	287	13.6	29	287	4.2	27	90	2.8	12	286	5.5	20	215	9.8	19	233	7.5	25	277	11.9
2,500	30	298	10.5	27	310	13.3	30	90	.7	30	305	14.0	17	312	13.7	23	286	15.0	29	299	5.1	27	109	2.5	---	---	---	16	218	10.0	19	254	7.3	23	273	13.9
3,000	30	297	11.8	27	310	14.5	30	227	.6	30	308	15.9	14	317	15.2	22	295	16.1	29	307	5.8	26	107	1.7	---	---	---	13	219	9.2	17	268	6.1	20	272	15.5
4,000	30	305	13.7	25	312	18.0	29	201	1.4	22	306	15.5	11	320	16.5	18	292	17.0	28	314	7.6	24	139	2.3	---	---	---	10	230	12.1	13	260	8.4	14	262	17.3
5,000	28	315	16.5	23	313	20.6	26	185	.9	18	298	18.8	---	---	---	17	298	18.1	28	307	8.2	20	130	3.0	---	---	---	---	---	---	11	261	11.4	12	262	18.8
6,000	27	311	17.1	19	311	23.0	26	204	.8	15	298	18.0	---	---	---	13	296	19.0	28	305	9.7	20	126	2.4	---	---	---	---	---	---	---	---	---	---	---	---
8,000	23	312	17.4	---	---	---	24	195	3.2	---	---	---	---	---	---	10	305	20.2	22	303	10.8	20	118	2.3	---	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	22	234	3.0	---	---	---	---	---	---	---	---	---	17	283	12.6	12	193	4.0	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	17	289	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T. during November 1949. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,636 m.)			Big Spring, Tex. (774 m.)			Bismarck, N. Dak. (505 m.)			Brownsville, Tex. (7 m.)			Caribou, Maine (191 m.)			Charleston, S. C. (13 m.)			Columbia, Mo. (237 m.)			Grand Junction, Colo. (1,473 m.)			Greensboro, N. C. (275 m.)			Hatteras, N. C. (3 m.)			International Falls, Minn. (358 m.)			Little Rock, Ark. (80 m.)			Medford, Oreg. (401 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	84	0.7	30	158	2.4	29	310	2.6	30	138	2.4	30	306	2.1	30	244	2.3	30	271	2.0	30	42	0.5	30	268	2.9	30	246	4.1	30	286	1.4	30	263	5.9	30	170	1.2
500	---	---	---	---	---	---	---	---	---	30	138	2.4	30	286	3.0	30	268	6.2	30	274	5.5	---	---	---	30	267	6.0	29	270	8.1	30	277	2.4	30	263	5.9	30	168	1.3
1,000	---	---	---	30	194	3.3	29	308	9.6	29	256	.6	30	276	4.1	29	275	6.5	30	292	8.4	---	---	---	30	273	8.2	29	268	7.9	30	298	5.1	30	276	7.7	30	182	2.7
1,500	---	---	---	30	250	3.7	29	313	13.2	29	335	1.7	30	264	5.4	28	272	6.9	30	299	10.3	30	42	.5	29	283	8.2	29	265	8.5	30	310	8.0	30	278	8.4	30	203	4.4
2,000	30	310	3.6	30	279	4.8	27	314	14.1	29	347	3.0	30	264	6.5	28	276	8.2	30	305	11.7	30	279	.6	29	283	9.3	28	261	9.9	30	313	9.8	28	295	9.6	30	221	6.9
2,500	30	316	5.3	30	293	5.7	25	312	14.6	27	338	3.4	30	264	8.3	28	278	9.9	30	305	12.1	30	267	2.3	29	281	11.3	28	259	11.8	30	316	11.5	27	294	11.9	30	238	9.1
3,000	30	312	5.6	30	298	6.9	24	315	15.0	28	323	4.3	30	257	10.4	27	272	12.1	30	308	13.4	30	288	3.6	29	273	12.9	27	259	13.3	30	318	13.2	26	292	13.2	30	238	10.7
4,000	30	321	6.2	30	311	6.8	20	318	17.7	28	309	5.9	30	253	13.9	27	264	14.8	30	304	16.8	29	320	7.8	28	276	17.3	27	256	17.9	26	320	14.0	22	298	13.7	30	244	12.4
5,000	30	314	7.3	30	318	8.4	16	315	15.6	28	295	6.1	30	243	18.4	24	259	15.4	29	304	18.6	29	313	11.3	28	267	19.9	25	257	20.1	24	318	17.3	22	298	17.1	28	246	13.9
6,000	30	314	8.3	30	312	7.8	15	304	15.8	27	287	7.9	29	244	19.8	19	256	18.1	25	306	19.8	28	310	12.3	25	267	21.3	21	254	21.5	23	322	17.5	20	297	17.2	26	241	15.2
8,000	26	333	10.0	28	309	8.8	13	296	17.9	27	264	12.8	22	244	23.4	11	246	22.2	19	299	18.1	23	308	15.3	18	267	26.3	13	267	27.6	18	324	16.9	14	292	16.6	20	243	14.3
10,000	25	321	11.4	27	304	10.3	10	298	21.1	26	263	21.0	18	242	27.0	---	---	---	14	313	18.1	18	323	14.1	---	---	---	---	---	---	15	300	19.6	10	302	15.3	18	235	18.4
12,000	21	319	9.6	21	297	12.5	---	---	---	19	255	21.4	12	242	21.5	---	---	---	12	301	19.3	15	318	15.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14,000	10	307	10.8	16	284	13.6	---	---	---	15	248	19.1	---	---	---	---	---	---	---	---	---	12	321	13.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	10	248	13.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Miami, Fla. (12 m.)			Nantucket, Mass. (14 m.)			Nashville, Tenn. (180 m.)			New Orleans, La. (6 m.)			Oakland, Calif. (8 m.)			Oklahoma City, Okla. (392 m.)			Rapid City, S. Dak. (980 m.)			San Antonio, Tex. (242 m.)			San Juan, P. R. (28 m.)			St. Cloud, Minn. (318 m.)			Santa Maria, Calif. (72 m.)			Sault Ste. Marie, Mich. (221) m.)			Spokane, Wash. (726 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	3	1.2	29	270	1.0	30	234	1.2	29	284	3.3	30	243	0.2	26	224	1.4	30	293	5.0	30	148	0.9	30	127	1.0	30	293	1.5	30	62	0.7	29	74	0.6	30	158	1.2
500	30	36	1.3	29	263	5.1	30	256	5.7	29	284	3.3	30	349	.3	26	224	1.4	---	---	---	30	148	.9	29	97	4.4	30	296	3.7	30	29	2.4	29	176	.5	---	---	---
1,000	30	25	1.0	28	262	7.2	30	272	8.8	28	305	4.0	30	223	.6	26	283	5.2	30	293	5.2	30	243	1.5	28	96	4.5	30	305	7.2	30	39	2.4	29	259	2.6	29	199	3.9
1,500	30	318	1.3	27	259	8.9	29	288	9.9	28	306	5.2	30	224	1.4	25	269	7.4	30	313	11.4	30	284	3.0	28	96	3.9	29	311	8.7	30	54	2.0	29	276	5.3	26	227	6.3
2,000	30	290	2.6	26	256	11.0	29	290	11.1	29	303	6.4	30	219	2.1	26	310	8.6	30	314	13.8	30	311	4.4	29	89	4.1	28	309	10.6	30	64	1.5	28	279	7.6	26	237	8.0
2,500	30	266	4.3	27	256	13.5	29	288	12.4	29	297	7.6	30	221	3.2	26	310	9.0	30	313	15.7	30	313	5.6	27	89	0.4	26	311	11.1	30	86	1.1	27	281	8.5	26	247	7.5
3,000	30	263	5.8	26	253	15.1	29	289	14.8	29	302	8.8	30	222	3.9	26	306	9.4	29	317	16.3	30	319	6.0	27	74	3.4	25	309	13.6	30	93	.6	26	287	9.3	25	261	8.1
4,000	28	260	6.9	25	250	18.1	29	287	17.6	29	301	10.5	30	234	5.0	26	310	10.5	23	309	14.9	30	316	7.7	26	67	2.5	23	308	16.0	30	273	.7	26	292	11.5	26	262	12.1
5,000	28	257	9.0	24	248	20.2	28	282	19.7	27	288	11.2	29	242	7.2	25	309	12.1	20	313	15.5	29	315	9.0	27	56	2.5	20	304	16.7	29	281	2.5	24	294	14.9	25	265	15.5
6,000	28	257	11.5	22	243	24.1	25	278	18.4	26	288	14.8	27	248	7.6	25	310	13.1	20	312	16.6	29	314	11.6	24	59	3.2	18	311	15.0	27	273	1.3	20	303	15.2	23	265	17.3
8,000	28	256	19.2	12	271	21.8	18	266	17.4	22	268	17.7	25	247	10.5	22	302	14.6	12	290	13.9	26	306	14.8	21	348	3.4	16	297	21.4	25	270	.7	17	304	16.7	17	257	14.4
10,000	27	253	26.1	11	264	24.5	12	269	18.2	15	266	22.6	21	246	9.8	18	309	16.4	---	---	---	22	302	17.9	19	327	9.2	12	299	24.8	25	263	2.7	12	295	18.7	12	254	14.3
12,000	20	250	30.4	---	---	---	11	265	22.3	10	262	25.4	18	252	6.6	16	307	19.3	---	---	---	17	287	23.5	18	323	14.1	---	---	---	24	243	4.0	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	11	285	5.0	12	285	17.2	---	---	---	10	266	28.1	16	325	11.9	---	---	---	21	264	4.4	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12	351	5.2	---	---	---	13	256	3.2	---	---	---	---	---	---

Altitude (meters) m. s. l.	Tatoosh Island, Wash. (33 m.)		
	Observations	Direction	Speed
Surface	28	100	4.3
500	28	157	7.1
1,000	25	186	7.7
1,500	25	196	8.3
2,000	25	211	9.6
2,500	25	217	11.3
3,000	25	224	13.2
4,000	24	229	16.1
5,000	22	234	18.7
6,000	23	240	22.1
8,000	18	239	25.1
10,000	12	235	23.8

NOTE.—Resultants prepared from rawins at high altitudes are biased toward lower wind speeds. Values appearing in this table should therefore be used with caution when the number of observations missing is greater than three. See note following Table III in the June 1948 issue of the MONTHLY WEATHER REVIEW.